Algebra Concepts Mid-Term Exam Review (Chapters 1-6)

1. Which property is illustrated by the following statement? [1] _____
   $(a+b)+c = a+(b+c)$

   [A] Inverse Property   [B] Distributive Property

   [C] Commutative Property   [D] Associative Property

2. Write in slope-intercept form the equation of the line.
   $m = 10, \ b = -7$

   [A] 7x-10y=1   [B] y=-7x+10   [C] y=10x-7   [D] 10x-7y=1

   [2] _____

3. Write an equation for the line containing $(-7, \ -5)$ and $(-4, \ 1)$.

   [A] y=2x-6   [B] y=-2x-7   [C] y=2x+9   [D] y=1/2x+9

   [3] _____

4. Write an equation of the line shown on the graph.
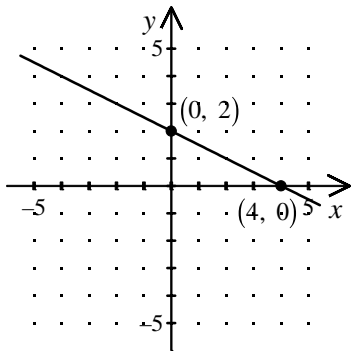
   [A] $y = \dfrac{1}{2}x + 4$ [B] y=2x+2   [C] $y = \dfrac{1}{2}x + 2$ [D] y=2x+4

   [4] _____

5. The Robertsons find that they have used $\frac{3}{4}$ gallon of paint to cover 780 square feet of wall.

Write an equation to find the number of gallons of paint they will need, G, in order to cover s square feet of wall.

[A] $s = \dfrac{G}{1040}$ [B] $G = \dfrac{s}{1040}$ [C] $s = \dfrac{G}{585}$ [D] $G = \dfrac{s}{585}$

[5] _____

6. Write the equation of the line in standard form. Use integer coefficients.
$$y = \frac{2}{3}x - 4$$

[A] -3x+2y=12   [B] 2x-3y=12   [C] 3x-2y=12   [D] -2x+3y=12

[6] _____

Solve the inequality.

7. $-\dfrac{1}{3}x > -12$ [A] $x < -36$ [B] $x > 4$ [C] $x > 36$ [D] $x < 36$

[7] _____

8. $4 - 3x \geq x + 3$ [A] $x \geq 4$ [B] $x \leq \dfrac{1}{4}$ [C] $x \geq \dfrac{1}{4}$ [D] $x \leq \dfrac{1}{2}$

[8] _____

9. $-9 \leq -3x + 15 \leq 12$

[A] $-9 \leq x \leq -2$ [B] $1 \leq x \leq 8$ [C] $-8 \leq x \leq -1$ [D] $2 \leq x \leq 9$

[9] _____

10. Write a single inequality that represents the statement.
x is less than -1 and is greater than or equal to -6

[A] $-6 \geq x > -1$ [B] $x - 1 \geq -6$ [C] $x - (-1) \geq -6$ [D] $-6 \leq x < -1$

[10] _____

11. At the county fair the admission fees are based on age. Children who are younger than 13 pay half fare. People who are 13 or older but younger than 65 pay full fare. Those 65 or older pay half fare. Write a compound inequality to describe *a,* the ages in years of people who pay half fare.

    [A] $13 < a \le 65$ [B] $65 < a \le 13$ [C] $a < 13$ or $a \ge 65$ [D] $13 \le a < 65$

    [11] _____

12. Solve the absolute-value equation.
$15 - |x| = 7$

    [A] 22, -22   [B] No Solution   [C] 2.14, -2.14   [D] 8, -8

    [12] _____

13. Solve the absolute-value inequality.
$|x - 2| < 6$

    [A] $-8 < x < 4$ [B] $x < 4$ [C] $-4 < x < 8$ [D] $x < 8$

    [13] _____

14. Which multiplication property is illustrated by the product $(7 \cdot 5) \cdot 4 = 7 \cdot (5 \cdot 4)$?

    [A] Identity   [B] Commutative   [C] Property of opposite   [D] Associative

    [14] _____

15. How long does it take to travel 320 miles at a rate of 64 miles per hour? Use the formula $d = rt$.

    [A] 20.48 hours   [B] 50 hours   [C] 20 hours   [D] 5 hours

    [15] _____

16. Yvonne put $7000 in a savings account. At the end of a year the account had earned $455 in interest. What was the yearly interest rate on the account?

    [A] 13.5%   [B] 6.5%   [C] 5.5%   [D] 12.5%

    [16] _____

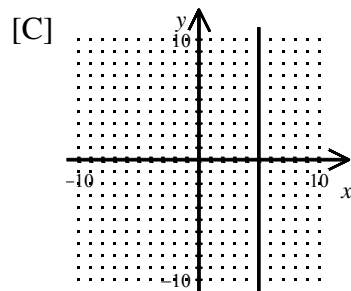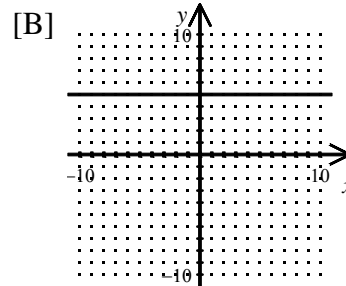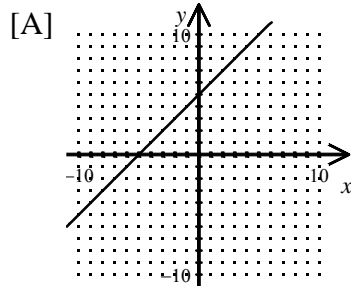17. Which ordered pair identifies a point in quadrant IV?

[A] (–1, –2)   [B] (1, 2)   [C] (1,0)   [D] (1, –2)

Graph the equation.

18. $x = 5$

[A]

[B]

[C]

[D] none of these

19. $2y + 6 = 0$

[A]
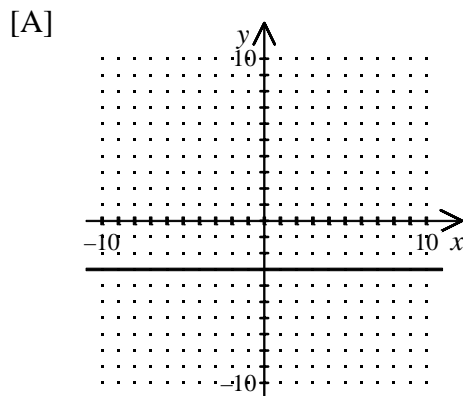
[B]
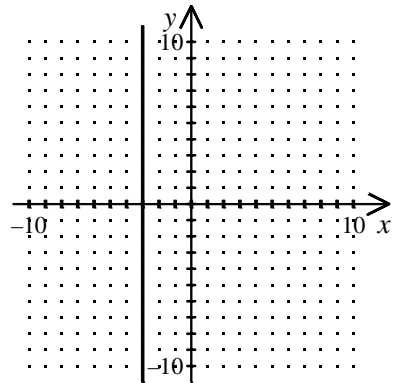
[19] _____

[C]
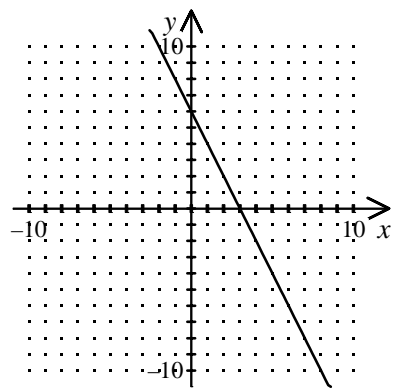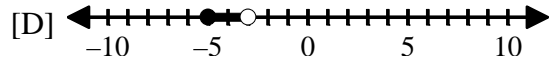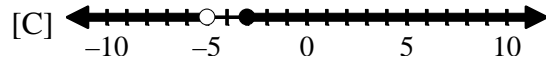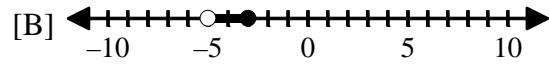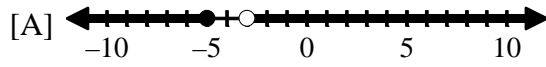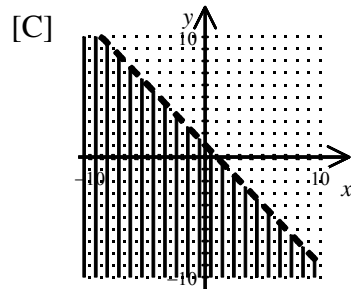

[D]
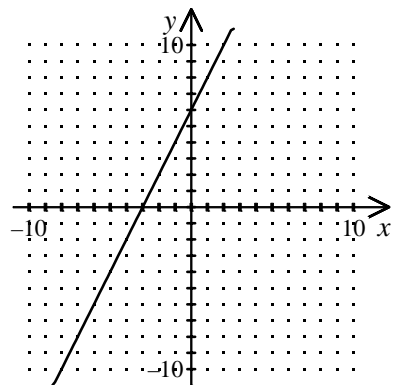
20. Graph the inequality.

$-5 \le x < -3$

[A]

[B]

[C]

[D]
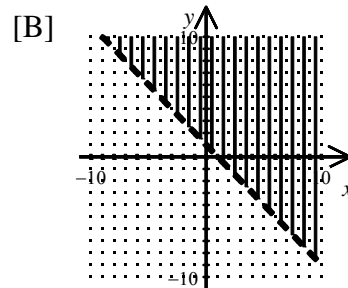
[20] _____

Choose the graph that shows the solution to the inequality.

21. $-y > x - 1$

[A]

[B]

[C]

[D]
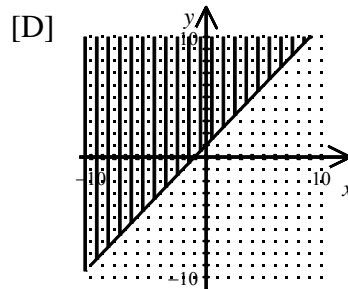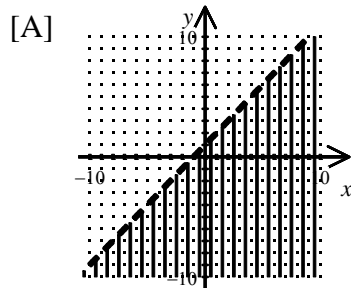
[21] _____

Choose the graph that shows the solution to the inequality.

22. $x \geq 3$

[A]

[B]

[C]

[D]
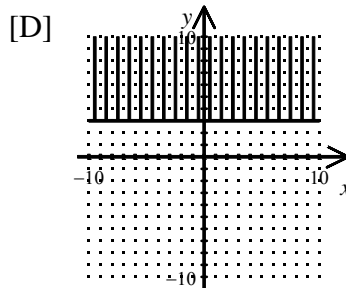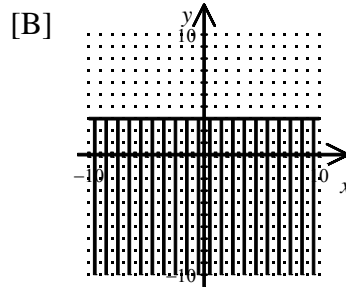
[22] _____

23. Identify the product that will be negative.

[A] $(-2)(-3)(-4)(5)$ [B] $(2)(-3)(-4)(5)$

[C] $(-2)(-3)(-4)(-5)$ [D] $(2)(3)(4)(5)$

[23] _____

24. Name the quadrant or axis the point (5, 2) is in.

[A] x-axis   [B] quadrant I   [C] quadrant II   [D] y-axis
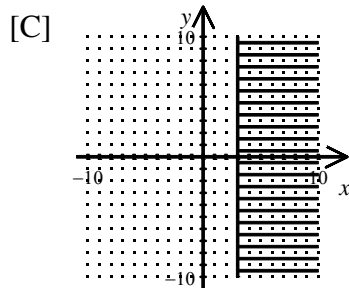
[24] _____

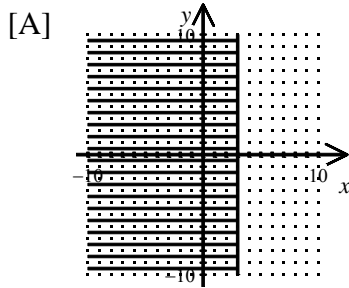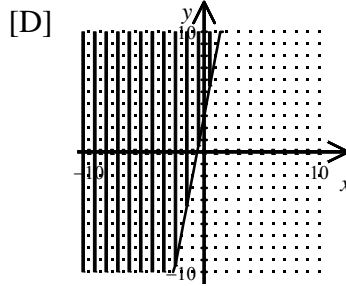25. Choose the graph that shows the solution to the inequality.
$-y \le 5x - 3$

[A]

[B]

[C]

[D]
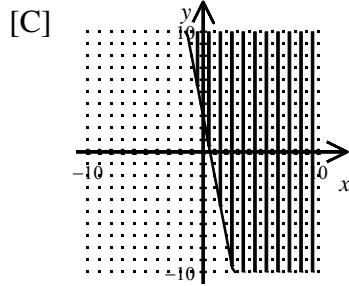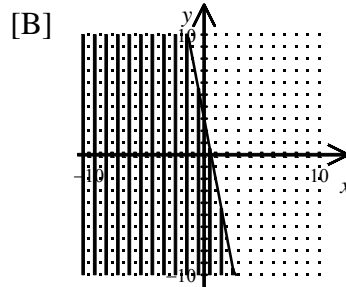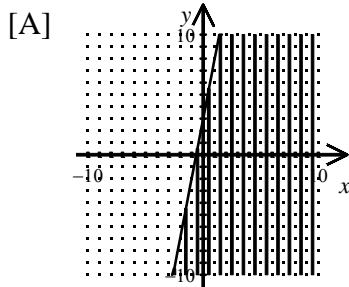
[25] _____

26. The temperature was $x°$ F. It fell $11°$F and is now $20°$F. Write a linear model of the situation.

[A] 11-x=20 [B] x-20=11 [C] 20-11=x [D] x-11=20

[26] _____

27. Write the phrase as a variable expression. Let x represent the number.
Three less than five times x

[A] 3x-5 [B] 3-5x [C] 5x-3 [D] 3<5x

[27] _____

28. Simplify the expression. [A] 30-3x [B] 5-18x [C] 2x [D] 5-3x
$$\frac{30 - 18x}{6}$$

[28] _____

29. Solve the equation.   [A] 1   [B] 13   [C] -4.5   [D] 1.5

$$\frac{1}{4}(4x+16) = 3+2(2-x)$$

[29] _____

30. Solve the equation. Round to the nearest hundredth.
    $2.5x - 4.3 = 4.6$

    [A] 3.56   [B] 3.6   [C] 3.5   [D] 1.2
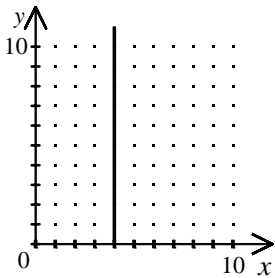
[30] _____

31. At the end of the summer, lawn furniture selling at a market price of $1094 is on sale
    for 24% off. What is the discount?

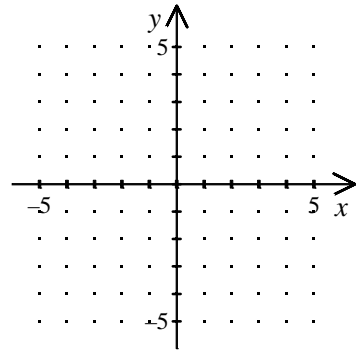   [A] $831.44   [B] $24.00   [C] $1070.00   [D] $262.56

[31] _____

32. Write the equation for this graph.

    [A] x=4   [B] 4x+4y=1   [C] y=x-4   [D] y=4

[32] _____

33. Sketch the graphs of $x = -2$ and $y = -4$. Find the point at which the two graphs intersect.

   [A] (-2,-4)　　　　[B] (-4,-2)　　　　[C] (-2.4)　　　　[D] (4,-2)

   [33] _____

34. The weight, W, of a plank varies *directly* with its length, l. A 7.5-foot plank weighs 30 pounds. Write an equation relating W and l.

   [A] *W=1/4 l*　　　　[B] l=4W　　　　[C] *l= 1/4 W*　　　　[D] *W=4l*

   [34] _____

35. Write the phrase as a variable expression. Let x represent the number.
   Three less than five times x

   [A] 3x-5　　　　[B] 5x-3　　　　[C] 3<5x　　　　[D] 3-5x

   [35] _____

36. The distance traveled (in meters) by the Oregon slug can be modeled by the function $f(t) = 0.4t$, where t is the time in minutes. Find the distance traveled in 16.7 minutes.

   [36] _____

37. Complete the table.

EXPONENTIAL FORM	WORDS	MEANING
3^6	three to the sixth power	
5^2		$5 \cdot 5$
	x to the third power or x cubed	$x \cdot x \cdot x$

38. Evaluate the expression for the given values of the variables.

$\left(4k + m\right)^2$ when $k = 3$ and $m = 2$

[38] _____

39. Make an input-output table to represent the function. Use 0, 1, 2, and 3 as the domain.
$y = 4 + 13x$

Input	Output

[39]

40. Use the rules of addition to find the sum.
$17.12 + (-5.23) + \left|1.72\right|$

[40] _____

Solve the equation.

41. $14 = 7y$

[41] _____

42. $6x + 3 = 39$

[42] _____

43. $\dfrac{3y+2}{4} = 7$

[43] _____

44. $x - 9 = -4x - 2$

[44] _____

45. One video rental club charges $25 to become a member and $2.50 to rent each video. Another charges no membership fee, but charges $3.25 to rent each video. How many videos must you rent to make the first club more economical?
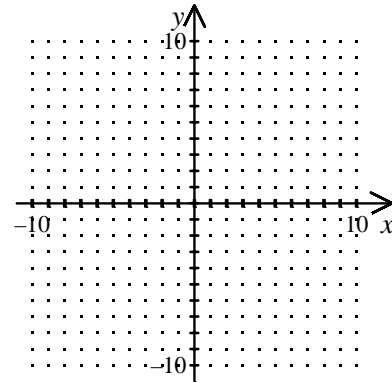
[45] _____

46. Solve for s.
     $2 = t - 5s$

[46] _____

47. Complete the table. Then graph the equation.

x	-3	-2	0	2	3
$y = \dfrac{1}{6}x - 3$					

x	-3	-2	0	2	3
$y = \dfrac{1}{6}x - 3$					

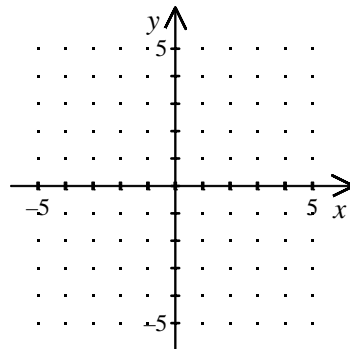[47] _____

48. In the equation $y = 9x + 7$, does y vary directly with x?

[48] _____

49. Write in slope-intercept form and sketch the line.
$4x + 3y - 8 = 0$

[49] _____

50. The distance traveled (in meters) by the Oregon slug can be modeled by the function $f(t) = 0.3t$, where t is the time in minutes. Find the distance traveled in 40.4 minutes.

[50] _____

51. Use the point-slope form to write an equation of the line that passes through the given point and has the given slope.

$(-7, 1)$, $m = \dfrac{1}{2}$

[51] _____

52. Write in slope-intercept form the equation of the line passing through (2, 2) and (–2, –3).

Show that this line is perpendicular to the line $y = -\dfrac{4}{5}x + 13$.

[52] _____